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09/811,239

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Kenneth Hsu

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12/30/2005

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EXAMINER

STEVENS, THOMAS H

ART UNIT

PAPER NUMBER

2123

DATE MAILED: 12/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/811,239

Applicant(s)

HSU ET AL.

Examiner

Thomas H. Stevens

Art Unit

2123

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 25 March 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

  
WILLIAM THOMSON  
SUPERVISORY PATENT EXAMINER

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 6/27/05.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

1. Claims 1-24 were examined.

### ***Section I: Non-Final Action (2<sup>nd</sup> Office Action)***

#### ***Information Disclosure Statement***

2. The information disclosure statement filed 6/27/05 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered. Document G "Circuit Emulation Service Interoperability Specification" was not provided.

#### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-24 were rejected under 35 U.S.C. 102(b) as being anticipated by Armitage et al., "MPLS: The Magic Behind the Myths" (January 2000)(hereafter: Armitage). Armitage teaches the differences between traditional IP routing and the emerging MPLS approach (abstract).

Claim 1. A method for circuit emulation over a multi-packet label switching (MPLS) network (pg. 124, abstract, lines 11-12), comprising the steps of: receiving a time division multiplexed data stream at an ingress end; dividing said data stream into a set of fixed sized packets (pg. 127, right column, 3<sup>rd</sup> paragraph "native frame format"); adding a service header to each of said packets; adding an additional header on top of said service header in accordance with MPLS protocols (pg. 124-125, right column, last paragraph to left column, 1<sup>st</sup> paragraph, respectively); removing said additional header after each packet has been processed by said MPLS network (pg. 127, left column, 6<sup>th</sup> paragraph); and using said service header to recover said data stream at an egress end (pg. 128, left column, lines 3-7).

Claim 2. The method of claim 1, further comprising the steps of: monitoring said data stream and attaching an alarm bit (pg. 127, "Label-Based Forwarding" section, paragraphs 3 and 4, regarding the "S" bit) in a service header of a subsequent packet if a break in said data stream is detected.

Claim 3. The method claim 1, further comprising the step of: using a structure pointer in said service header to indicate whether a header byte a synchronous payload (pg. 127, "Label-Based Forwarding" section, paragraph 4 "SONET/SDH"), envelope is present

within a packet, said structure pointer indicating the location of said header byte in said packet.

Claim 4. The method of claim 3, further comprising the step of: reserving a pointer value indicating that said header byte is not present within said packet (pg. 128, left column, 4<sup>th</sup> paragraph, lines 5-9).

Claim 5. The method of claim 1, further comprising the steps recording a stuffing time difference (pg. 127, left column, "Label-Based Forwarding" section, 3<sup>rd</sup> paragraph) in a service header at said ingress end; and implementing said stuffing time difference at said egress end (pg. 127, left column, "Label-Based Forwarding" section, 3<sup>rd</sup> paragraph).

Claim 6. The method of claim 1, further comprising the steps (a) storing a first set of frames into a data buffer; (b) calculating a first data average of said first set of frames in said data buffer to obtain threshold (pg. 125, right column, 5th paragraph, "provisioning") value; storing a next set of frames into said data buffer; (c) calculating a next data average of said next set of frames in said data buffer; (d) comparing said next data average to said threshold (pg. 125, right column, 5th paragraph, "provisioning") value; (e) said next data average is greater than said threshold value: generating a negative justification indicator (pg. 127, "Label-Based Forwarding" section, 2nd paragraph, "TTL reaches 0 "); and sending one more byte at said egress end (pg. 128,

right column, "egress from the LSP tunnel, the top-level label is popped and the LSR then switches the remaining MPLS frame based on the new top label"); (f) if said next data average is less than said threshold value: generating a positive justification indicator (pg. 127, "Label-Based Forwarding" section, 2nd paragraph, "the TTL is set to a finite value at the beginning of the LSP, decremented by one at every label switch"); and sending one less byte at said egress end; and (h) repeating said steps (c)-(g) (rejected based continuation, see *In re Dilnot*, 319 F.2d 188, 138 USPQ 248 (CCPA 1963)).

Claim 7. The method of claim 1, further comprising the steps of: checking a sequence counter (pg.129, left column, 1st paragraph) said service header each packet in said set of packets; locating at least one header byte in said set of packets (integral to loading the various components to the frame; pg.127, "Label-Based Forwarding" section, 1<sup>st</sup> and 2<sup>nd</sup> paragraphs); measuring all bytes between two header bytes (integral to loading the various components to the frame; pg.127, "Label-Based Forwarding" section, 1<sup>st</sup> and 2<sup>nd</sup> paragraphs); and pushing said set of packets into a frame (pg. 128, 4<sup>th</sup> paragraph, line 7).

Claim 8. The method of claim 1 further comprising the steps checking a sequence counter (pg.129, left column, 1st paragraph) in said service header of each packet in said set of packets to determine packets are present sequentially; and inserting a

dummy packet a packet is missing said set of packets (packing the cell; pg. 128, 4<sup>th</sup> paragraph, line 7).

Claim 9. The method of claim 1 further comprising the steps of: receiving an out of sequence packet (pg. 128, left and right columns, last and first paragraphs, respectively); and discarding said out of sequence packet (pg.127, "Label-Based Forwarding" 3<sup>rd</sup> paragraph "detection and discard of looping MPLS").

Claim 10. The method of claim 1 further comprising the steps of: checking a sequence counter (pg.129, left column, 1st paragraph) in said service header of each packet in said set of packets to determine packets are present sequentially (inherent to the SONET process); terminating a current connection if multiple packets are missing in said set of packets (inherent to the SONET process); discarding said set of packets (inherent to the SONET process); and establishing a new connection to begin receiving packets (pg. 128, left column, lines 1-19) .

Claim 11. The method of claim further comprising the steps of: checking a sequence counter (pg.129, left column, 1st paragraph) said service header of each packet in said set of packets to determine if all packets are present sequentially; and establishing an in-frame condition after said set packets are received in sequence (pg. 127, right column, 3<sup>rd</sup> paragraph).

Claim 12. The method of claim 11, further comprising the steps of: determining whether said in-frame condition is valid (pg.127, "Label-Based Forwarding" section, 3<sup>rd</sup> paragraph, lines 5-6 "scheduling disciplines"); and terminating a current connection if said in-frame condition is not valid (pg.127, "Label-Based Forwarding" section, 3<sup>rd</sup> paragraph, lines 5-6 "scheduling disciplines").

Claim 13. The method of claim 11, further comprising the steps checking a sequence counter (pg.129, left column, 1st paragraph) in said service header of each packet in said set of packets to determine packets are present sequentially (inherent to the SONET process); and inserting a dummy packet a packet is missing said set of packets (packing the cell; pg. 128, 4<sup>th</sup> paragraph, line 7).

Claim 14. The method of claim further comprising the steps of: receiving an out of sequence packet (pg.127, "Label-Based Forwarding" section, 3<sup>rd</sup> paragraph, lines 5-6 "scheduling disciplines"); and discarding said out of sequence packet (pg. 127, reference 3, far right-hand side of the page "TTL allows for eventual discard of MPLS frames that otherwise waste link bandwidth as the loop").

Claim 15. The method of claim 13 further comprising the steps of: checking a sequence counter (pg.129, left column, 1st paragraph) in said service header of each packet in said set of packets to determine packets are present sequentially; terminating a current connection if multiple packets are missing in said set of packets(pg. 127, reference 3,



far right-hand side of the page "TTL allows for eventual discard of MPLS frames that otherwise waste link bandwidth as the loop"); discarding said set of packets(pg. 127, reference 3, far right-hand side of the page "TTL allows for eventual discard of MPLS frames that otherwise waste link bandwidth as the loop"); and establishing a new connection to begin receiving packets(pg. 127, reference 3, far right-hand side of the page "Some techniques for establishing labeled paths can result in transient loops").

Claim 16. The method of claim further comprising the steps of: checking a sequence counter (pg.129, left column, 1st paragraph) said service header of each packet in said set of packets to determine if all packets are present sequentially (pg.127, "Label-Based Forwarding" section, 3<sup>rd</sup> paragraph, lines 5-6 "scheduling disciplines"); and establishing an in-frame condition after said set packets are received in sequence (pg. 128, right column, 2<sup>nd</sup> paragraph "at the egress level").

Claim 15. The computer program product of claim 13, further comprising: logic code for using (pg. 127, right column, 2<sup>nd</sup> paragraph, "PPP code") a structure pointer said service header to indicate whether a header byte a synchronous payload envelope is present within a packet, said structure pointer indicating the location of said header byte in said packet.

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Claim 16. The computer program product of claim 15, further comprising: logic code (pg. 127, right column, 2<sup>nd</sup> paragraph, "PPP code") for reserving a pointer value indicating that said header byte is not present within said packet.

Claim 17 The computer program product claim 13, further comprising: logic code for recording a stuffing time difference a service header at said ingress end (pg. 127, left column, "Label-Based Forwarding" section, 3<sup>rd</sup> paragraph); and logic code for implementing said stuffing time difference at said egress end (pg. 127, left column, "Label-Based Forwarding" section, 3<sup>rd</sup> paragraph).

Claim 18. The computer program product of claim 13, further comprising: (a) logic code for storing a first set of frames into a data buffer; (b) logic code for calculating a first data average of said first set of frames said data buffer to obtain a threshold (pg. 125, right column, 5th paragraph, "provisioning") value; logic code for storing a next set of frames into said data buffer; (d) logic code for calculating a next data average of said next set of frames in said data buffer; logic code for comparing said next data average to said threshold (pg. 125, right column, 5th paragraph, "provisioning") value; said next data average is greater than said threshold (pg. 125, right column, 5th paragraph, "provisioning") value: logic code for generating a negative justification indicator (pg. 127, "Label-Based Forwarding" section, 2nd paragraph, "TTL reaches 0 "); and logic code for sending one more byte at said egress end (pg. 128, right column, "egress from the LSP tunnel, the top-level label is popped and the LSR then switches the remaining MPLS

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frame based on the new top label"); (g) said next data average is less than said threshold (pg. 125, right column, 5th paragraph, "provisioning") value: logic code for generating a positive justification indicator (pg. 127, "Label-Based Forwarding" section, 2nd paragraph, "the TTL is set to a finite value at the beginning of the LSP, decremented by one at every label switch"); and (2) logic code for sending one less byte at said egress end (pg. 128, right column, 2nd paragraph "at the egress from the LSP tunnel, the top-level is popped" or removed); and (h) logic code for repeating said (c)-(g) (rejected based continuation, see *In re Dilnot*, 319 F.2d 188, 138 USPQ 248 (CCPA 1963)).

Claim 19. The computer program product of claim 13, further comprising: logic code for checking a sequence counter (pg. 129, left column, 1st paragraph) in said service header of each packet in said set of packets; logic code for locating at least one header byte said set of packets (integral to loading the various components to the frame; pg. 127, "Label-Based Forwarding" section, 1<sup>st</sup> and 2<sup>nd</sup> paragraphs); logic code for measuring bytes between two header bytes (integral to loading the various components to the frame; pg. 127, "Label-Based Forwarding" section, 1<sup>st</sup> and 2<sup>nd</sup> paragraphs); and logic code for pushing said set of packets into a frame (pg. 128, 4<sup>th</sup> paragraph, line 7).

Claim 20. The computer program product of claim 13, further comprising: logic code for checking a sequence counter (pg. 129, left column, 1st paragraph) in said service header each packet said set of packets determine if all packets are present sequentially

(inherent to the SONET process); and logic code for inserting a dummy packet if a packet is missing said set of packets (packing the cell; pg. 128, 4<sup>th</sup> paragraph, line 7).

Claim 21. The computer program product of claim 20, further comprising: logic code for receiving an out of sequence packet (pg. 128, left and right columns, last and first paragraphs, respectively); and logic code for discarding said out of sequence packet (pg.127, "Label-Based Forwarding" 3<sup>rd</sup> paragraph "detection and discard of looping MPLS").

Claim 22. The computer program product of claim 13, further comprising: logic code for checking a sequence counter (pg.129, left column, 1st paragraph) said service header of each packet in said set of packets to determine if all packets are present sequentially (part the process to alleviate miss timed packets pg.127 "Label-Based Forwarding" paragraphs 1-5); logic code for establishing an in-frame condition after all packets for a frame are received in sequence(pg. 128, left and right columns, last and first paragraphs, respectively); logic code terminating a current connection if multiple packets are missing in said set of packets(part the process to alleviate miss timed packets pg.127 "Label-Based Forwarding" paragraphs 1-5); logic code for discarding said set of packets (pg. 127, reference 3, far right-hand side of the page "TTL allows for eventual discard of MPLS frames that otherwise waste link bandwidth as the loop"); and logic code for establishing a new connection to begin receiving packets (pg. 128, left column, lines 1-19).

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Claim 23. The computer program product of claim 22, further comprising: logic code for checking a sequence counter (pg.129, left column, 1st paragraph) in said service header of each packet in said set of packets to determine if all packets are present sequentially; and logic code establishing an in-frame condition after the set of packets are received in sequence (pg. 128, left and right columns, last and first paragraphs, respectively).

Claim 24. The computer program product of claim 23, further comprising: logic code for determining whether said in-frame condition is valid (pg.127, "Label-Based Forwarding" section, 3<sup>rd</sup> paragraph, lines 5-6 "scheduling disciplines"); and logic code for terminating a current connection if said in-frame condition is not valid (pg.127, "Label-Based Forwarding" section, 3<sup>rd</sup> paragraph, lines 5-6 "scheduling disciplines").

***Section II: Response to Applicants' Arguments (1<sup>st</sup> Office Action)***

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5. Applicants are thanked for addressing this issue. The Office acknowledges the effort and response to the Office request.

**37 CFR 1.131**

6. The declaration filed on 12/6/05 under 37 CFR 1.131 is sufficient to overcome the Malis et al. reference stated within the first office action.

***New Rejection***

7. Applicant's arguments, see page 1, filed 12/6/05, with respect to the rejection(s) of claims 1-24 under 35 U.S.C. 102(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground of rejection is made in view of Armitage et al..

***Citation to Relevant Prior Art***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- US Patent 6,826,196: teaches a data switching system over arbitrary link types that include link types that do not inherently support virtual circuits.
- US Patent 6,721,316: teaches a pipelined line card architecture for receiving, modifying, switching, buffering, and queuing and dequeuing packets for transmission.
- US Patent 6,259,699: teaches a novel networking architecture and technique for transmitting both cells and packets or frames across a common switch fabric.
- Yun-K., "A Terabit Multiservice Switch" IEEE 2001 pg.58-70 teaches a scalable switching platform from multiple Gbits to multiple Tbits per second in five custom 0.18-micron cmos lcs.
- Um et al., "A Study on Interworking Scenario Between ATM-Based MPLS Network and IPOA/LANE Network" pg.275-280 teaches interworking scenarios between classical IPOA/LANE network and ATM-based MPLS network.

***Correspondence Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mr. Tom Stevens whose telephone number is 571-272-3715, Monday-Friday (8:00 am- 4:30 pm EST).

If attempts to reach the examiner by telephone are unsuccessful, please contact examiner's supervisor Mr. Leo Picard ((571) 272-3749). The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Answers to questions regarding access to the Private PAIR system, contact the Electronic Business Center (EBC) (toll-free (866-217-9197)).

December 27, 2005

  
WILLIAM THOMSON  
SUPERVISORY PATENT EXAMINER

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